

EXERCISES

For more practice, see *Extra Practice*.

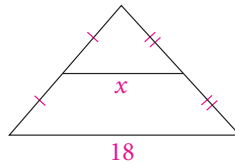
Practice and Problem Solving

A Practice by Example

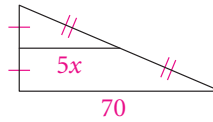
Example 1 (page 244)

Mental Math Find the value of x .

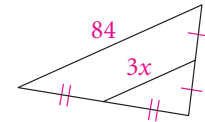
1.



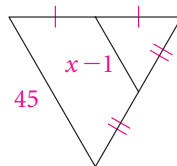
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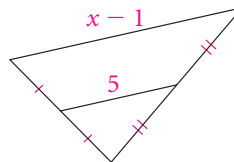
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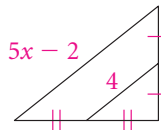
4.



5.



6.



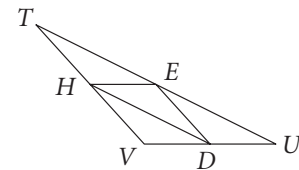
Points E , D , and H are midpoints of $\triangle TUV$.
 $UV = 80$, $TV = 100$, and $HD = 80$.

7. Find HE .

8. Find ED .

9. Find TU .

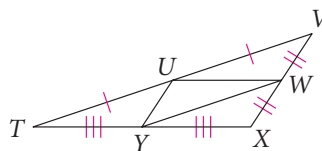
10. Find TE .



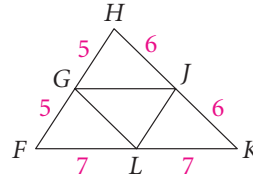
Example 2 (page 245)

Identify pairs of parallel segments in each diagram.

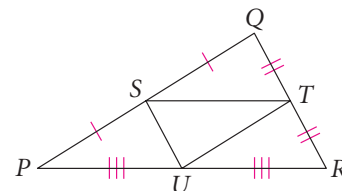
11.



12.



13. a. In the figure at the right, identify pairs of parallel segments.
b. If $m\angle QST = 40$, find $m\angle QPR$.



Name the segment that is parallel to the given segment.

14. \overline{AB}

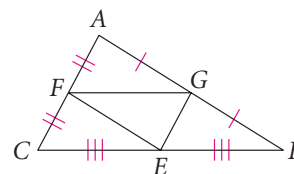
15. \overline{BC}

16. \overline{EF}

17. \overline{CA}

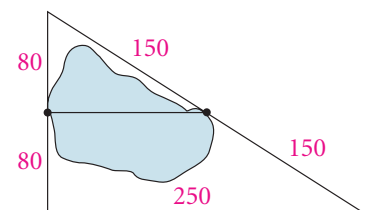
18. \overline{GE}

19. \overline{FG}



Example 3 (page 245)

20. **Indirect Measurement** Kate wants to paddle her canoe across the lake. To determine how far she must paddle, she paced out a triangle, counting the number of strides, as shown.
- a. If Kate's strides average 3.5 ft, what is the length of the longest side of the triangle?
- b. What distance must Kate paddle across the lake?

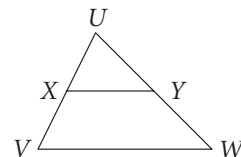


B Apply Your Skills

- 21. a. Architecture** The triangular face of the Rock and Roll Hall of Fame in Cleveland, Ohio, is isosceles. The length of the base is 229 ft 6 in. What is the length of a segment located half way up the face of the Rock and Roll Hall of Fame?
- b. Writing** Explain your reasoning.

X is the midpoint of \overline{UV} . Y is the midpoint of \overline{UW} .

- 22.** If $m\angle UXY = 60$,
find $m\angle V$.
- 23.** If $m\angle W = 45$
find $m\angle UYX$.
- 24.** If $XY = 50$,
find VW .
- 25.** If $VW = 110$,
find XY .

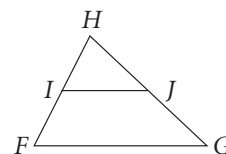


- 26. Coordinate Geometry** The coordinates of the vertices of a triangle are $E(1, 2)$, $F(5, 6)$, and $G(3, -2)$.
- a.** Find the coordinates of H , the midpoint of \overline{EG} , and J , the midpoint of \overline{FG} .
- b.** Verify that $\overline{HJ} \parallel \overline{EF}$.
- c.** Verify that $HJ = \frac{1}{2}EF$.

\overline{IJ} is a midsegment of $\triangle FGH$. $IJ = 7$, $FH = 10$, and $GH = 13$. Find the perimeter of each triangle.

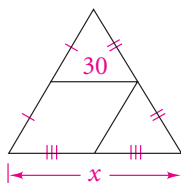
27. $\triangle IJH$

28. $\triangle FGH$

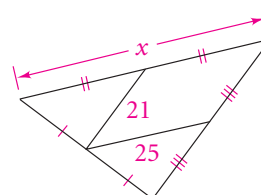


Algebra Find the value of each variable.

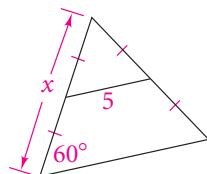
29.



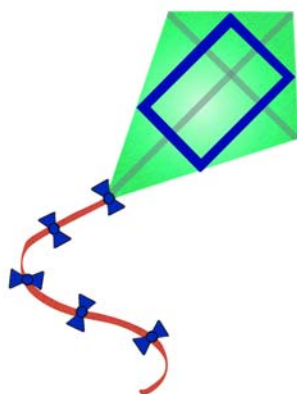
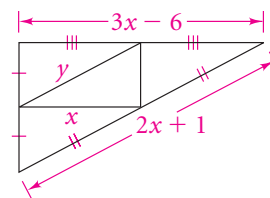
30.



31.



32.



Exercise 33

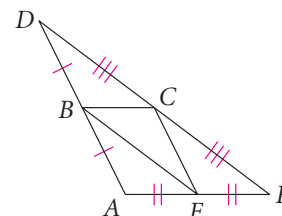
- 33. Kite Design** Marita is designing a kite to look like the one on the left. Its diagonals are to measure 64 cm and 90 cm. She will use ribbon to connect the midpoints of its sides. How much ribbon will Marita need?

Use the figure at the right for Exercises 34–36.

- 34.** If $DF = 24$, $BC = 6$, and $DB = 8$,
find the perimeter of $\triangle ADF$.

- 35. Algebra** If $BE = 2x + 6$ and $DF = 5x + 9$,
find the value of x , then find DF .

- 36. Algebra** If $EC = 3x - 1$ and $AD = 5x + 7$,
find the value of x , then find EC .



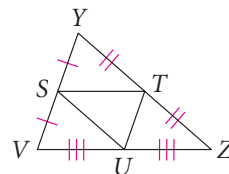
Challenge

37. **Open-Ended** Explain how you could use the Triangle Midsegment Theorem as the basis for this construction. Draw \overline{CD} . Draw point A not on \overline{CD} . Construct \overline{AB} so that $\overline{AB} \parallel \overline{CD}$ and $AB = \frac{1}{2}CD$.
38. **Coordinate Geometry** In $\triangle GHJ$, $K(2, 3)$ is the midpoint of \overline{GH} , $L(4, 1)$ is the midpoint of \overline{HJ} , and $M(6, 2)$ is the midpoint of \overline{GJ} . Find the coordinates of G , H , and J .

Proof 39. Write a paragraph proof.

Given: S , T , and U are midpoints.

Prove: $\triangle YST \cong \triangle TUZ \cong \triangle SVU \cong ?$.

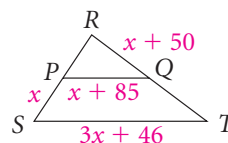


Standardized Test Prep

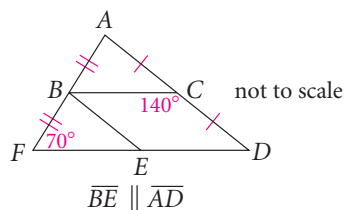
Gridded Response

Q and P are midpoints of the sides of $\triangle RST$.

40. What is RS ?
41. What is TQ ?
42. What is TS ?



43. What is $m\angle ABC$?
44. What is $m\angle D$?
45. What is $m\angle A$?
46. What is $m\angle CBE$?



Take It to the NET

Online lesson quiz at
www.PHSchool.com

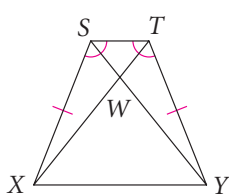
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Mixed Review

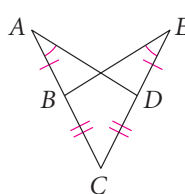
Lesson 4-7

Name a pair of overlapping congruent triangles in each diagram. State whether the triangles are congruent by SSS, SAS, ASA, AAS, or HL.

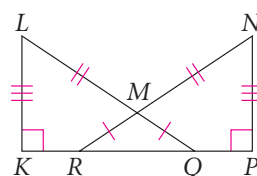
47.



48.



49.



Lesson 3-5 x^2 Algebra Graph each line.

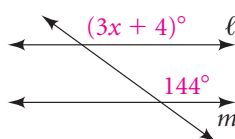
50. $y = x + 2$

51. $y = 3x - 2$

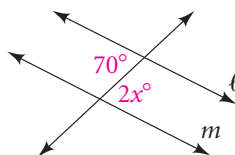
52. $y = -x - 5$

Lesson 3-2 x^2 Algebra Determine the value of x for which $\ell \parallel m$.

53.



54.



55.

